

### REMARKS

The foregoing amendments and these remarks are presented in response to the Office Action in the above-captioned application dated November 25, 1998 (the "Office Action"). For the reasons cited herein, reconsideration and allowance of claims 1-17, as now presented, are requested. The claims as now presented are reproduced in the Compilation of Claims attached hereto for the Examiner's convenience.

The specification has also been amended to correct some informalities. Specifically, the specification has been amended to reflect the current status of the parent application; to provide the new address of the American Type Culture Collection; and to provide sequence identification numbers in compliance with the sequence rules.

Applicants request entry of pages 54-59 ("Sequence Listing") into the specification of the above-identified patent application. Applicants submit along with the amendment to the specification an initial computer readable form (CFR) copy of the "Sequence Listing"; a corrected paper copy of the "Sequence Listing" (pages 54-59); and a statement Pursuant to 37 C.F.R. 1.821(f).

#### Rejections Under 35 U.S.C. § 112, First Paragraph

Claims 1-6 were rejected for a perceived lack of enablement due to the use of the phrases "stringent hybridization conditions" and "exhibits *Frazzled* activity." Although Applicants do not accede to the grounds for rejection, in order to further prosecution of the present application, claims 1 and 2 have been amended to recite specific hybridization conditions and to replace the phrase "exhibits *Frazzled* activity" with the specific language "capable of binding to a *Wnt* protein." Support for the specific hybridization conditions is found at page 12, lines 19-20, of the specification; support for "capable of binding to a *Wnt* protein" is found at page 4, line 20, page 8, line 5, and page 10, lines 27-28. Withdrawal of the rejection is requested.

Claims 15-16 were rejected for a perceived lack of enablement due to the use of the phrases "stringent hybridization conditions" and "exhibits *Frazzled* activity." The above amendments address this rejection.

Claims 7-9 were rejected for a perceived lack of enablement due to the use of the phrase "naturally occurring allelic variants." Although Applicants do not accede to the grounds for rejection, in order to further prosecution of the present application, claim 7 has been amended to delete this phrase. Withdrawal of the rejection is requested.

Claim 17 was rejected for a perceived lack of enablement. The above amendment addresses this rejection.

Claims 7-9 and 17 were rejected under Section 112, first paragraph, because the specification allegedly is not commensurate in scope with the claims drawn to "naturally occurring allelic sequences." Although Applicants do not accede to the grounds for rejection, in order to further prosecution of the present application, claim 7 has been amended to delete this phrase. Withdrawal of the rejection is requested.

For the above-stated reasons, withdrawal of all of the rejections under Section 112, first paragraph, is requested.

#### Rejections Under 35 U.S.C. § 112, Second Paragraph

Claims 1-6, 11-13 and 15-16 were rejected under Section 112, second paragraph, for perceived indefiniteness. For the reasons cited below, the rejection is respectfully traversed.

Claims 1-6 and 15-16 were rejected as indefinite in the recitation of "stringent hybridization conditions." Although Applicants do not accede to the grounds for rejection, in order to further prosecution of the present application, claims 1 and 2 have been amended to delete this phrase, thereby obviating the rejection.

Claims 11-13 were rejected as indefinite in the recitation of "suitable" signal peptide. Although Applicants do not accede to the grounds for rejection, in order to further prosecution of

the present application, claim 11 has been amended to delete this term, thereby obviating the rejection.

Claims 15-16 were rejected as indefinite, since they relate to purification of human SDF-5 by culturing DNA according to claims 1 and 2. Although Applicants do not accede to the grounds for rejection, in order to further prosecution of the present application, claims 1 and 2 have been amended to delete the objectionable phrase, thereby obviating the rejection.

For the above-stated reasons, withdrawal of all of the rejections under Section 112, second paragraph, is requested.

Rejection Under 35 U.S.C. § 102(b)

Claims 1 and 2 were rejected under 35 U.S.C. § 102(a) as anticipated by Wang et al., due to the perceived indefinite nature of the phrases "stringent hybridization conditions" and "exhibits *Frazzled* activity." Although Applicants do not accede to the grounds for rejection under Section 102, in order to further prosecution of the present application, claims 1 and 2 have been amended to recite DNA molecules which hybridize under specific hybridization conditions to nucleotides of SEQ ID NO:1 and encode a protein capable of binding to a *Wnt* protein. The cited reference does not disclose a DNA molecule which would hybridize under the specified hybridization conditions and encode a protein capable of binding to a *Wnt* protein. Withdrawal of the rejection is requested.

Rejection Under 35 U.S.C. § 103

Claims 1-6 were rejected under 35 U.S.C. § 103 as being unpatentable over Wang et al., and further in view of U.S. Patent No. 4,889,806 and Sambrook et al. None of the cited references, individually or in combination, teach or suggest DNA molecules or vectors containing DNA molecules which would hybridize under the recited hybridization conditions and encode a protein capable of binding to a *Wnt* protein. Nor do the references teach or suggest a host cell transformed with such a vector. Therefore, the cited references do not render claims 1-6, as now presented, obvious. Withdrawal of the rejection under 35 U.S.C. § 103 is requested.

CONCLUSION

In view of the foregoing amendments and remarks, all outstanding issues of patentability have been resolved. Accordingly, the claims should be allowed. Should the Examiner believe that a telephonic interview would assist in clarifying any remaining issues, the Examiner is asked to call the undersigned attorney at the telephone number below. If any fee is due with regard to this Amendment, Applicants hereby authorize payment of such fee from Deposit Account No. 07-1060.

Respectfully submitted,

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**COMPILATION OF CLAIMS**

1. An isolated DNA molecule comprising a DNA sequence selected from the group consisting of:

(a) nucleotides #256, 307, 310, 313, 316, 319, 322, 325 or 328 to #1140 or 1143 of SEQ ID NO: 1; and

(b) sequences which hybridize in 0.1X SSC, 0.1% SDS at 65°C to (a) and encode a protein capable of binding to a *Wnt* protein.

2. An isolated DNA molecule comprising a DNA sequence selected from the group consisting of:

(a) nucleotides encoding amino acids #1, 18, 19, 20, 21, 22, 23, 24 or 25 to #295 of SEQ ID NO: 2;

(b) nucleotides encoding amino acids #1 to #275 of SEQ ID NO:3; and

(c) sequences which hybridize in 0.1X SSC, 0.1% SDS at 65°C to (a) or (b) and encode a protein capable of binding to a *Wnt* protein.

3. A vector comprising a DNA molecule of claim 1 in operative association with an expression control sequence therefor.

4. A vector comprising a DNA molecule of claim 2 in operative association with an expression control sequence therefor.

5. A host cell transformed with the vector of claim 3.

6. A host cell transformed with the vector of claim 4.

7. An isolated DNA molecule comprising a DNA sequence selected from the group consisting of:

(a) nucleotide #316 to #1143 of SEQ ID NO: 1; and

(b) equivalent degenerative codon sequences of (a).

8. A vector comprising a DNA molecule of claim 7 in operative association with an expression control sequence therefor.

9. A host cell transformed with the vector of claim 8.
10. An isolated DNA molecule encoding human SDF-5 protein, said DNA molecule comprising nucleotide #316 to #1143 of SEQ ID NO: 1.
11. An isolated DNA molecule according to claim 10, further comprising a nucleotide sequence encoding a signal peptide 5' to and linked in frame to the DNA coding sequence.
12. A vector comprising a DNA molecule of claim 11 in operative association with an expression control sequence therefor.
13. A host cell transformed with the vector of claim 12.
14. An isolated DNA molecule encoding human SDF-5 protein, said DNA molecule comprising nucleotide #256 to #1143 of SEQ ID NO: 1.
15. A method for producing purified human SDF-5 protein, said method comprising the steps of:
  - (a) culturing a host cell transformed with a DNA sequence according to claim 1, comprising a nucleotide sequence encoding human SDF-5 protein; and
  - (b) recovering and purifying said human SDF-5 protein from the culture medium.
16. A method for producing purified human SDF-5 protein said method comprising the steps of:
  - (a) culturing a host cell transformed with a DNA sequence according to claim 2, comprising a nucleotide sequence encoding human SDF-5 protein; and
  - (b) recovering and purifying said human SDF-5 protein from the culture medium.
17. A method for producing purified human SDF-5 protein said method comprising the steps of:
  - (a) culturing a host cell transformed with a DNA sequence according to claim 7, comprising a nucleotide sequence encoding human SDF-5 protein; and
  - (b) recovering and purifying said human SDF-5 protein from the culture medium.